

## **3-2 Advance Planning Studies**

Advance Planning Studies (APS) are required in Project Study Reports (PSR) and Project Reports (PR) to document the scope and cost of structure work in projects. An APS consists of one plan sheet for each structure showing the basic structure layout details and cost estimate. Unless otherwise determined by the OSFP Liaison Engineer, APSs must be prepared for all structure work including bridges, culverts, tunnels, retaining walls, pumping plants, structure modifications, and any non-standard or special design structures.

The APS shall be prepared in accordance with guidelines set forth in *Memo to Designers*. Consultants shall be responsible for developing feasible structure alternatives, costs, and controls appropriate for the specific location. The structure consultant and the roadway consultant must coordinate project and structure alternatives and associated estimates to arrive at the best project solution. The least expensive structure cost does not necessarily mean the least expensive project cost or best project solution. For example, a more costly precast structure will eliminate falsework and may reduce other project costs to the extent it may produce the least expensive over-all project cost and meet other project objectives.

Seismic evaluation of existing structures is required to ensure conformance with current standards or to determine the extent of retrofit required. Evaluation and analysis shall be done as specified in the *Memo To Designers*. Early consultation and coordination between OSFP, the District, consultants, and the sponsoring agency is necessary to achieve early convergence on the scope of design effort required and eliminate wasted effort on unnecessary analysis.

For widenings and modifications of existing structures, the Structures Maintenance records shall be reviewed for deficiencies and any recommended work that should be included with the project. This work shall be documented in a design memo by the consultant.

### **Discussion of Deliverables**

The following deliverables are required for review at the Advance Planning Study stage: 1) the APS, 2) Preliminary Foundation Report, 3) Preliminary Hydraulic reports, 4) APS Checklist, 5) Design Memo, and 6) Itemized Cost Estimate. The last five deliverables are required to identify site parameters that could have a significant impact on the scope or cost of the structure proposed by the APS. Additional information on the deliverables is discussed below.

## Advance Planning Study

The Advance Planning Study delineates a feasible structure type, requirements, constraints, and associated cost estimate summary for the structure work involved. The APS need only use the minimum detailing necessary and basic dimensions to clearly define the scope the structure work and to develop a reasonable cost estimate. As a minimum, the APS should use Plan, Elevation, and Typical Section views and make note of all critical assumptions. Additional APSs must be prepared as appropriate to consider alternative structure types.

The APS shall be prepared on the most current APS formatted plan sheet, which is available through the OSFP website.

## Preliminary Foundation and Preliminary Hydraulics Reports

Preliminary Foundation and Hydraulic Reports are required for an APS to identify basic site parameters which may have a significant impact on the structure scope and cost. For more information on these reports, refer to the foundation and hydraulics sections elsewhere in this Guide as well as in *Memo to Designers*.

## APS Checklist

As an aid in the collection of the information needed to prepare the APS and estimate the cost, a checklist entitled “Consultant Prepared Structures Advance Planning Study (APS) Checklist” is attached. This checklist is available through the OSFP web site and should be utilized and submitted with the APS to document pertinent project information. One checklist may be used for all bridges on the project.

## Design Memo

The consultant must prepare a Design Memo to summarize and document the following items:

- Important or unusual design assumptions or structure features
- Discussions with Caltrans personnel concerning any key assumptions
- Modifications from Structure Maintenance Records recommendations
- Seismic retrofit modifications
- Local agency requirements such as aesthetics, improvements in vicinity of the structure, airspace usage, or other obstructions
- Special Railroad requirements, including shoofly provisions and cost
- Special foundation requirements, including scour critical work, special excavation such as Type A, Type D, and/or hazardous or contaminated material



- Special construction requirements, including limited site accessibility or seasonal work.

One Design Memo per project is acceptable provided the memo cites the individual structures appropriately.

### Itemized Cost Estimate

The APS structure cost estimate must be supported by an itemized cost estimate which must show estimated quantities or square meter (foot) factors for major items of work, associated unit prices, extended item totals, and a subtotal of all item costs. The itemized cost estimate must also show a grand total for the structure work by the addition of a 25% contingency factor and 10% mobilization factor to the subtotal of all item costs.

The *Bridge Design Aids* manual contains charts useful in estimating quantities as well as a sample form for Bridge Planning Estimates. Construction contract unit prices from *Contract Cost Data* books, which are available through the OSFP web site, can be used as a basis to establish item unit prices.

### Deliverables

- 6 copies of each APS plan sheet
- 2 copies of the Preliminary Foundation Report
- 2 copies of the Preliminary Hydraulics Report (when required)
- 6 copies of the "Consultant Prepared Structures Advance Planning Study (APS) Checklist"
- 6 copies of a consultant prepared Design Memo
- 2 copies of the Cost estimate by item
- 1 copy of the draft PSR or draft PSR/PR

### Review and Approval

Within four (4) weeks after receiving the APS submittal, OSFP will return comments to the District.

Resubmittal may be required if extensive revisions or alternatives are necessary. When the APS is acceptable, the OSFP Liaison Engineer will sign the Oversight Approval block on the APS and transmit it by memo to the District.

### Attachment

3-2.1      Consultant    Prepared    Advance    Planning    Study    (APS)    Checklist



### Consultant Prepared Advance Planning Study (APS) Checklist (Sheet 1 of 2)

#### Consultant Prepared Advance Planning Study (APS) Checklist

Sheet 1 of 2

Date:	Consultant Firm (for structures):	Phone No:
Designed by:		Phone No:
EA:	County:	Sta:
		KP(PM)
Project Description:		
Bridge No(s):	Bridge Name(s):	
Total number of bridges in project:		
APS Alternative Letter or Number (if more than one):		
Purpose of this APS:	Initial APS Cost & Feasibility <input type="checkbox"/>	Revised scope <input type="checkbox"/>
		Update cost <input type="checkbox"/>

#### Part A Items to collect and considerations prior to beginning the APS

All items listed in Part A are to be made available and submitted if requested by the Liaison Engineer.  
(Mark **N/A** if not applicable)

- ☐ Preliminary profile grade of proposed structure.
- ☐ Typical section of the proposed structure. (Including barrier type, sidewalks, cross slope %, etc.)
- ☐ Grades or spot elevations of roadway below the structure.
- ☐ Typical section of roadway below the structure. (Including shoulders, gutters, embankment slope.)
- ☐ Site map: including horizontal alignment of new structure and the roadway below, topo, contours, etc.
- ☐ Stage construction or detour plan for traffic on the structure.  
(number of lanes to remain open, Temp Railing, etc.)
- ☐ Stage construction or detour plan for the roadway below the structure.  
(falsework openings for each stage and any restrictions.)
- ☐ "As Built" plans for existing structures.
- ☐ Future widening plans of upper and lower roadway (verify with Route Concept Report).
- ☐ Site aerial photograph (at the proposed structure).
- ☐ Environmental and/or permit requirements (areas of potential impact, construction windows, etc.)
- ☐ Overhead and underground utility plans
- ☐ Any other information that you feel is necessary to complete the study. (Other concerns that may affect the APS: local agency requirements such as aesthetics, improvements in vicinity of structure, airspace usage, other obstructions, etc.)

OSFP  
7/30/01



### Consultant Prepared Advance Planning Study (APS) Checklist (Sheet 2 of 2)

#### Consultant Prepared Advance Planning Study (APS) Checklist

Sheet 2 of 2

##### Part B Considerations during the APS design and cost estimate preparation

1. Has this project been discussed with:  
the **OSFP** Liaison Engineer? Yes ☐ No ☐  
the Caltrans District Project Manager? Yes ☐ No ☐  
the roadway consultant? Yes ☐ No ☐
2. Have the Caltrans Structures Maintenance records been reviewed? Yes ☐ No ☐  
If the records recommend any work for the structure, is it included in the APS? Yes ☐ No ☐
3. Are there special aesthetic considerations? Yes ☐ No ☐
4. (Widenings and Modifications)  
Has this project been reviewed for seismic retrofit requirements? Yes ☐ No ☐  
Are seismic retrofit requirements included in the APS? Yes ☐ No ☐
5. Any special Railroad requirements? Yes ☐ No ☐  
Shoofly required? Yes ☐ No ☐  
Cost of shoofly included as a separate item in the project cost estimate? Yes ☐ No ☐
6. Any special foundation requirements, including scour critical work, special excavation  
such as Type A, Type D, and/or hazardous or contaminated material? Yes ☐ No ☐
7. Any special construction requirements, including limited site accessibility or seasonal work? Yes ☐ No ☐
8. Other items to be included in the cost such as slope paving, approach slabs, and/or  
adjacent retaining walls? Yes ☐ No ☐
9. Remove existing bridge? Yes ☐ No ☐  
Total Deck Area: \_\_\_\_\_
10. Any other unusual or special requirements? Yes ☐ No ☐
11. Provide and attach a consultant prepared Design Memo to summarize and document any  
important assumptions, discussions, decisions, unusual items, local agency requirements  
such as aesthetics, improvements in vicinity of the structure, airspace usage,  
other obstructions, or any items noted above. Summary attached? Yes ☐ No ☐

Designer: (Printed Name)	Designer's Signature:	Date:
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